

REMARKS

Claims 1, 2 and 5-12 are pending and under consideration. Claims 1 and 8 are amended as described herein. Applicants assert that the amendments to Claims 1 and 8 are fully supported by the specification, for example at p. 7, line 19 through p. 8, line 4, and therefore do not constitute the addition of new matter.

Claims 1, 2 and 5-12 are rejected under 35 U.S.C. § 103(a) as being rendered obvious by U.S. Patent No. 4,767,833 by Yumoto *et al.*, in view of JP 56-41216.

For reasons set forth below, Applicants respectfully request that the rejections be removed and the claims be allowed to issue.

I. The Claims Are Not Obvious

Claims 1, 2 and 5-12 are rejected under 35 U.S.C. § 103(a) as being rendered obvious by U.S. Patent No. 4,767,833 by Yumoto *et al.*, in view of JP 56-41216. According to the Examiner, Yumoto *et al.* disclose a transparent, thermoplastic resin composition obtained by graft polymerizing 50-95 parts by weight of a monomer mixture consisting essentially of styrene and methyl methacrylate in the presence of 5-50 parts by weight of a rubbery substance, wherein the rubbery substance is comprised of either (A) 40-80% by weight of small aperture styrene-butadiene copolymer latex with a gel content of 30-100%, or (B) 20-60% by weight of large aperture styrene-butadiene copolymer latex, with a gel content of 10-80%. The Examiner further notes that Yumoto *et al.* do not teach the use of polybutadiene latex. However, according to the Examiner, one of ordinary skill in the art would find it obvious to substitute polybutadiene for styrene-butadiene in the teachings of Yumoto *et al.*, because the prior art of JP 56-41216 allegedly teaches that polybutadiene and styrene-butadiene are functionally equivalent materials in the context of transparent

thermoplastic resins.

In response, Applicants reiterate their position that Claims 1, 2 and 5-12 are nonobvious and patentable in view of Yumoto *et al.*, in combination with JP 56-41216. As noted in Applicants' response of July 25, 2002, one of ordinary skill in the art would not have been motivated, by combining the teachings of Yumoto *et al.* with those of JP 56-41216, to replace styrene-butadiene with polybutadiene in a thermoplastic transparent resin composition, because, as shown in the Tables enclosed with the July 25, 2002 response, polybutadiene rubbers have much higher Mooney and solution viscosities than those of styrene-butadiene rubbers. The high viscosities of polybutadiene rubber cause it to be more easily agglomerated during graft polymerization, leading to the generation of a great number of coagulums. Since the coagulums cannot be incorporated into a thermoplastic transparent resin product, the yield of the thermoplastic transparent resin will be reduced in proportion to the amount of coagulums generated. Consequently, less usable product will be produced and greater amounts of waste will be generated, limiting the economic utility of processes involving high viscosity polybutadiene latex rubber. Moreover, the incorporation of even small amounts of coagulums into the thermoplastic resin will significantly reduce its transparency and hence utility. Accordingly, one of ordinary skill in the art would not be motivated to combine the teachings of Yumoto *et al.* with those of JP 56-41216, because doing so would decrease the utility of the thermoplastic resin so produced. The instant invention overcomes the limitations of the high viscosity of polybutadiene rubber by increasing its gel content, which reduces the agglomeration that previously has limited the utility of polybutadiene rubber in the manufacture of thermoplastic resins.

Applicants further assert that one of ordinary skill in the art would not have a reasonable expectation of success in replacing the styrene-butadiene of Yumoto *et al.* with polybutadiene as taught by JP 56-41216. In addition to the reasons cited above relating to the known problems of high

viscosity polybutadiene rubber, Yumoto *et al.*, on column 8, lines 53-58, actually teach away from the instant invention, by stating that it is difficult to obtain a thermoplastic resin composition superior in both transparency and chemical resistance when the gel content is outside the scope of the invention (*i.e.* 10%-80% by weight for large aperture polybutadienes). Applicants further note that the Examples or Comparative Examples cited by Yumoto *et al.* in Table 1 having gel contents for "large aperture" styrene-butadiene (SBR) of 70% or greater are associated with poorer properties of strength or transparency relative to the other examples of Yumoto *et al.* and also relative to Example 1 of the previously-submitted '132 declaration. Thus, one of ordinary skill would not be motivated to increase the gel content of large aperture SBR based on Yumoto *et al.*, because doing so reduces the strength and transparency of the resulting thermoplastic resin, and this deficiency would not be obviated by replacement of styrene-butadiene with polybutadiene.

Unlike the large aperture SBR described by Yumoto *et al.*, large aperture polybutadiene having a gel content of 70-95% and a particle diameter of 2600-5000 Å cannot be manufactured by methods other than those described in the instant application because of the higher viscosity of polybutadiene rubber relative to SBR. Applicants novel solution to this problem of high viscosity of polybutadiene is to adhere small aperture polybutadiene rubber latex particles of high gel content to form large aperture polybutadiene rubber latex particles of high gel content, which reduces the viscosity of the polybutadiene rubber and thereby allows it to be used for the economical manufacture of thermoplastic transparent resins. To further accentuate this novel aspect of the instant invention, Claim 1 has been amended as described herein to specify the means by which the large aperture polybutadiene rubber of the instant invention is produced. Applicants note that Yumoto *et al.* specifically teach away from resin compositions with gel contents greater than 70% (Yumoto *et al.*, column 8, lines 53-58 and Table 1, as discussed hereinabove). Such materials

therefore are outside of the ranges allegedly disclosed by Yumoto *et al.* and would not have been obvious to one of ordinary skill in view of Yumoto *et al.*, either alone or in combination with JP 56-41216. Applicants also have amended Claim 8 to clarify the method by which the large aperture polybutadiene particles are produced. In light of these amendments, Applicants respectfully request that the Examiner withdraw the rejection of Claims 1, 2 and 5-12 under 35 U.S.C. § 103(a).

CONCLUSION

Based on the foregoing remarks and in light of the amendments, Applicants submit that the present application is in condition for allowance. A Notice of Allowance is therefore respectfully requested.

Applicants believe a fee of \$110.00 is due with this response for a one-month extension of time as required under 37 C.F.R. §1.17(a)(1) and, accordingly, Applicants enclose a check in the amount of \$110.00. Should any additional fees be required in association with this communication or should any overpayment be made, the Commissioner is hereby authorized to charge an additional fees or credit any overpayments to Deposit Account Number 02-4377. A duplicate copy of this communication is enclosed.

Respectfully submitted,

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Enclosures